# *An Account of ſome Obſervations lately made at* Nurenburg *by Mr.* P. Wurtzelbaur, *ſhewing that the Latitude of that Place has continued without ſenſible alteration for* 200 *Years laſt paſt; as likewiſe the Obliquity of the Ecliptick; by comparing them with what was obſerved by* Bernard Walther *in the Year* 1487, *being a Diſcourſe read before the* Royal Society *in one of our late Meetings.*

WHether the Poles and Axis of the Earth be really fixt in the Globe, or ſubject to be transferred from place to place is an old Enquiry, though now lately revived by Mr. *Hook* in his ingenious eſſays upon the great mutations and *Cataſtrophies* which in all appearance have hapned to the Earth's Surface. A neceſſary conſequence of ſuch a tranſlation of the Poles would be the change of the Latitudes of places, which would encreaſe in thoſe Regions towards which the Poles approach, and decreaſe in thoſe from which they recede: and under the Meridian 90 degrees removed from that in which the Poles ſhift, the Latitudes continuing the ſame, the Meridian Line would only alter; but no two places conſiderably differing in Latitude can be ſuppoſed, wherein if there be any ſenſible motion of the Poles, it ſhall not be perceived by the alteration of the Latitude of one or both of them.

The accurate Mr. *Wurtzelbaur*, has lately furniſhed us with the means of examining this Hypotheſis by obſervation, having ſent us the Meridian Altitudes of the Sun taken at *Nurenburg* about the two Solſtices in the Year 1686. *June* the 10*th*. he found the Meridian Altitude of ☉ 64*gr.* 2*m.* 20*s.* and the next Day 64*gr.* 2*m.* 25*s.* and on *December* 14°. 3 days after the Solſtice, wherein the Sun was got two minutes higher, he found the Meridian Altitude 17*gr.* 9*m.* 10*s.*

wherefore the ſolſtitial Altitude was 17*gr.* 7*m.* 10*s.* Theſe heights were taken by an Inſtrument of 6 foot Radius of Braſs; and the skill and diligence of the obſerver is not to be doubted.

To compare with theſe I find among *Bernard Walthers* obſervations made in the ſame City of *Nurenburg*, two hundred Years before, *viz.* in the Year 1487, that the Meridian Altitude of the Sun in the ſummer Solſtice was obſerved by the Parallactick inſtrument of *Ptolomy*, whereby the Chord of the Suns diſtance from the Zenith was obſerved 44890 parts of 100000 *Radius*; the ſame being confirmed by the concurrence of the obſervations of ſeveral Years both before and after. The arch anſwering to this Chord gives the Suns diſtance from the Zenith 25*gr.* 56*m.* 30*s.* and conſequently the Meridian Altitude its Complement to a Quadrant, 64*gr.* 3*m.* 30*s.* Again, the ſame Year 1487, the Chord of the Meridian diſtance of ☉ from the Zenith, on the day of the Winter ſolſtice was found 118790, confirmed likewiſe by many ſubſequent obſervations; the arch anſwering to this Chord is 72*gr.* 52*m.* 40*s.* and its complement 17*gr.* 7*m.* 20*s.* the Meridian hight of the Sun in the Winter ſolſtice.

Hence it appears that the ſolſtitial hights were very nearly the ſame at *Nurenburg* 200 Years ago as now they are, that of the Summer ſolſtice being but one minute differing, the other only 10*s.* both which may poſſibly ariſe from the defects of the Inſtruments of theſe obſervers, being made with plaine ſights; but what I ſhall neceſſarily conclude from hence is, that if there be ſuch a motion of the Poles, it is either very ſlow, or elſe nearly at right angles to the Meridian of *Nurenburg*; in which latter caſe the Latitudes of places about *Tunking*, *Siam*, *Malacca* and *Java* on the one ſide, and in our *American* plantations of *New-England*, *Virginia*, *Jamaica &c.* on the other, ought to change faſteſt; but I have never yet heard of any ſuch thing by any of our Navigators; whence if there be ſuch a change of the Earths Poles, it muſt neceſſarily require a long time to become ſenſible.

Beſides, from theſe Obſervations it appears that the obliquity of the Ecliptick has continued unaltered for theſe 200 Years laſt paſt, that is to ſay, that the Angle which the Earths Axis makes with the plane of the Ecliptick or Orb wherein ſhe moves annually round the Sun, has been without ſenſible Change in all that time; which will be very hard to conceive, if we allow a tranſlation of the Earths Poles; for the direction of the Axis being perfectly at Liberty, it muſt be purely caſual, if it ſo hit, that after ſuch change, it make the ſame Angle with the Ecliptick as before.

A farther argument of this ſlowneſs of the change of the Poles is the Latitude of *Alexandria*, the habitation of thoſe Famous *Aſtronomers* of antiquity *Eratoſthenes*, *Timocharis*, *Hipparchus* and *Ptolomy*, and for that reaſon it may be concluded that this of all the Latitudes the ancients has left us, ought to be one of the moſt correct. This by *Ptolomy* is ſaid to be 30*gr.* 58*m.* North, (which he uſes in all his computations in his *Almegiſt*, and ſeems derived from the proportion of the *Gnomon* to its Equinoctial ſhadow, as 5 to 3) but in his *Geography*, 31*gr.* juſt. In the Year 1638 the curious and Ingenious Mr. *Greaves*, when he went to viſit the *Ægyptian Pyramides*, of which he has given ſo good an account, did with a ſufficient Inſtrument obſerve the Latitude of *Alexandria*, and found it 31*gr.* 4*m.* or 6 minutes more than it is reputed by *Ptolomy*, and before him by *Eratoſthenes*; ſo that in about 2000 Years the Latitude of *Alexandria* has altered only a few minutes, and ſo few that the accuracy of the obſervations of the ancients may well be queſtioned: But both being granted, this motion will amount to no more than a degree in 20000 Years.

This is ſaid not with intent to invalidate what Mr. *Hook* hath from ſo good grounds advanced, *viz.* that the Ball of the Earth, at leaſt the fluids thereof, being neceſſarily of the Figure of a *Sphæroides prolatus*, or flat Oval, whoſe ſhorteſt diameter is the Axis, and greateſt Circle the Equinoctial; if the Poles be ſuppoſed changed, the Equinoctial will be ſo too; and conſequently the Water muſt riſe and cover thoſe parts from which the Poles recede, and fall off and leave bare thoſe places towards which the Poles approach. By this means it may be accounted for, how ſuch ſtrange marine things are found on the tops of hills, and ſo deep under ground; and ſcarce any other way. But from theſe and the like obſervations it will follow, that if theſe inundations are produced by any regular motion of the Poles, it would require a prodigious number of Ages to effect thoſe changes we may be certain have been. Beſides, if the acceſs and receſs of the Sea were after ſuch a gradual manner, as when produced by ſuch an eaſie tranſlation of the Poles, as can by obſervation be admitted, thoſe Inundations could never be fatal to the Inhabitants, for that they would alwais give notice of their Coming, ſo that the People might provide for their ſafety. But the Holy *Scriptures* and Pagan Tradition do unanimouſly agree, that the laſt great Deluge was brought to paſs in a few days, with no previous notice, ſo that the account we have thereof, could not by this Hypotheſis be made out, without the ſuppoſition of a great and ſudden alteration in the Poles of the Earths diurnal Revolution; for which whether we ſhould have recourſe to the Intelligent powers that firſt impreſt this whirling motion on the Ball, or leave it to be performed naturally, by the caſual Choc of ſome tranſient body, ſuch as a Comet or the like, whereby the former Axis might be loſt and a new Revolution produced, differing both in time and poſition from the old; I ſhall not undertake to diſpute: ſuch a ſuppoſition would include likewiſe a change of the length of the Year and Eccentricity of the Earths Orb; for which yet we have no ſort of Authority.

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*LONDON*, Printed by *J. Streater*, and are to be Sold by *Sam. Smith* at
the *Princes Arms* in St. *Pauls-Church-Yard*, 1687.